DIRECT TESTIMONY OF

JAMES W. NEELY

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2003-2-E

Q. Please state your name, business address and current position with South Carolina Electric and Gas Company.

A. James W. Neely, 1426 Main Street, Columbia, South Carolina. My current position is Resource Planning Engineer.

Q. Describe your educational background and professional experience.

A. I received a Bachelor of Science degree in Electrical Engineering from Clemson University, a Bachelor of Science degree from Mars Hill College in Mars Hill, North Carolina, and a Master of Science degree in Management from Southern Wesleyan University. Prior to my position in Resource Planning I worked as an engineer at VC Summer Nuclear Station.

Q. Briefly summarize your current duties.

A. As a Resource Planning Engineer I am responsible for modeling SCE&G's electric and gas generation systems in order to forecast system operation.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe how we forecast the operation of SCE&G's electric system in order to meet the projected electric load in a least cost manner. To develop the forecast we use the PROSYM chronological dispatch model for

SCE&G system simulation. In the model there are four classifications of pertinent inputs and outputs (see Exhibit No._____(JWN-1).

Q. What is the PROSYM simulation model?

A. PROSYM models how the SCE&G electric system will meet the projected electric load. PROSYM is a power system simulation model used to perform generation operational planning, capacity planning, risk assessment, and market simulation. We use the PROSYM model to answer questions such as: how much coal will need to be purchased; what type of generation should be added; and how many times will a unit will be required to start? For the purpose of these proceedings I will focus on those issues that relate to the fuel hearing.

Q. Does any other utility use this model?

A. Henwood Energy is the developer and vendor for PROSYM. This model is used by over 100 energy organizations including Progress Energy, Santee Cooper, Southern Company, and TVA. Henwood conducts annual meetings to provide model training, information about changes in the industry, and interaction between users. I participate in these meetings.

Q. Discuss the model inputs.

A. The following are key inputs to the model:

1. Customer Load data
2. Fuel Price Data
3. Generator Operating Parameters
4. Market Prices

Customer Load Data: The SCANA Forecasting Department annually provides a forecast of monthly territorial energy requirements. Mr. Bailey has described the load forecast in his testimony. This monthly load forecast is used to create forecasts of hourly loads based on historical hourly load data.

Fuel Price Data: A forecast of monthly fuel prices for coal and oil are provided by the SCE&G Fossil/Hydro Procurement Department. Fuel data also include transportation costs and Sulfur content of coal. A forecast of monthly nuclear fuel prices is provided by the SCE&G Nuclear Fuel Management Department. A Gas price forecast is purchased from Global Insights and is updated monthly. Global Insights' forecast considers various factors that affect gas prices such as price of other fuels, gas production, and demand. Gas transportations costs are added to Global Insights' gas prices.

Generator Operating Parameters: Generator operating parameters include heat rate, capacity, maintenance outage schedule, forced outage rate, and operating constraints. Operating constraints include variables such as minimum up and down times, ramp rates, and start costs. All of these variables control the cost and feasibility of dispatching each unit each hour. See Exhibit No._____(JWN-2) for an example of inputs.

Market Prices: The market prices for power are input into the model to reflect the opportunities that SCE&G has to purchase power at prices below its cost of generation or sell power above its cost of generation. The market prices utilized in the model are determined using SCE&G's marginal costs and the marginal costs of utilities in the southeast.

Q. Explain how PROSYM models the electric system.

A. PROSYM is a chronological hourly dispatch model. The model uses a powerful data input method capable of handling the large volume of information required to perform highly detailed studies of electric generation operation. Using a time detail of one hour allows for planning studies that reasonably approximate actual system operation. In each hour of a study period, PROSYM considers a complex set of operating constraints to simulate the least-cost operation of the utility. This hour-by-hour simulation, respecting chronological, operational, and other constraints, is the essence of the model. Exhibit No._____(JWN-3) illustrates the results of a one-week simulation using the PROSYM chronological approach to the modeling of a generation system.

SCE&G uses the Convergent Monte Carlo solution method to simulate the dispatch of its system. This method causes carefully distributed outages throughout each period such that a unit with an outage rate of x is available exactly 1-x of the time. This allows rapid simulation of long periods of time and is tuned to help account for the effect of outages at different times of day and seasons of the year.

Q. What are the outputs of the model?

A. PROSYM simulations can provide the following information to perform planning studies.

The general classes of information that can be reported include:

1. Complete summary of load statistics
2. Discrete and distributed maintenance results
3. System reliability (hourly Loss of Load Probability (LOLP) and Expected Unserved Energy (EUE))
4. Reserve margins by week and year

5. Generation by unit
6. Number of start-ups by unit
7. Fuel burn by unit
8. Fuel mixing by unit
9. Annual and daily fuel limits reached
10. Average heat rate by unit
11. Fuel cost by unit
12. Other operating costs, and total cost, by unit
13. Pumped storage statistics
14. Purchase and sales
15. Dump power, for the system
16. Emissions data, including implied and actual costs
17. Line losses and wheeling charges
18. Hour-by-hour marginal costs
19. Marginal costs summarized by up to 12 user-defined time periods
20. Average generating costs summarized by user-defined time periods
21. Marginal cost of each station group or fuel class

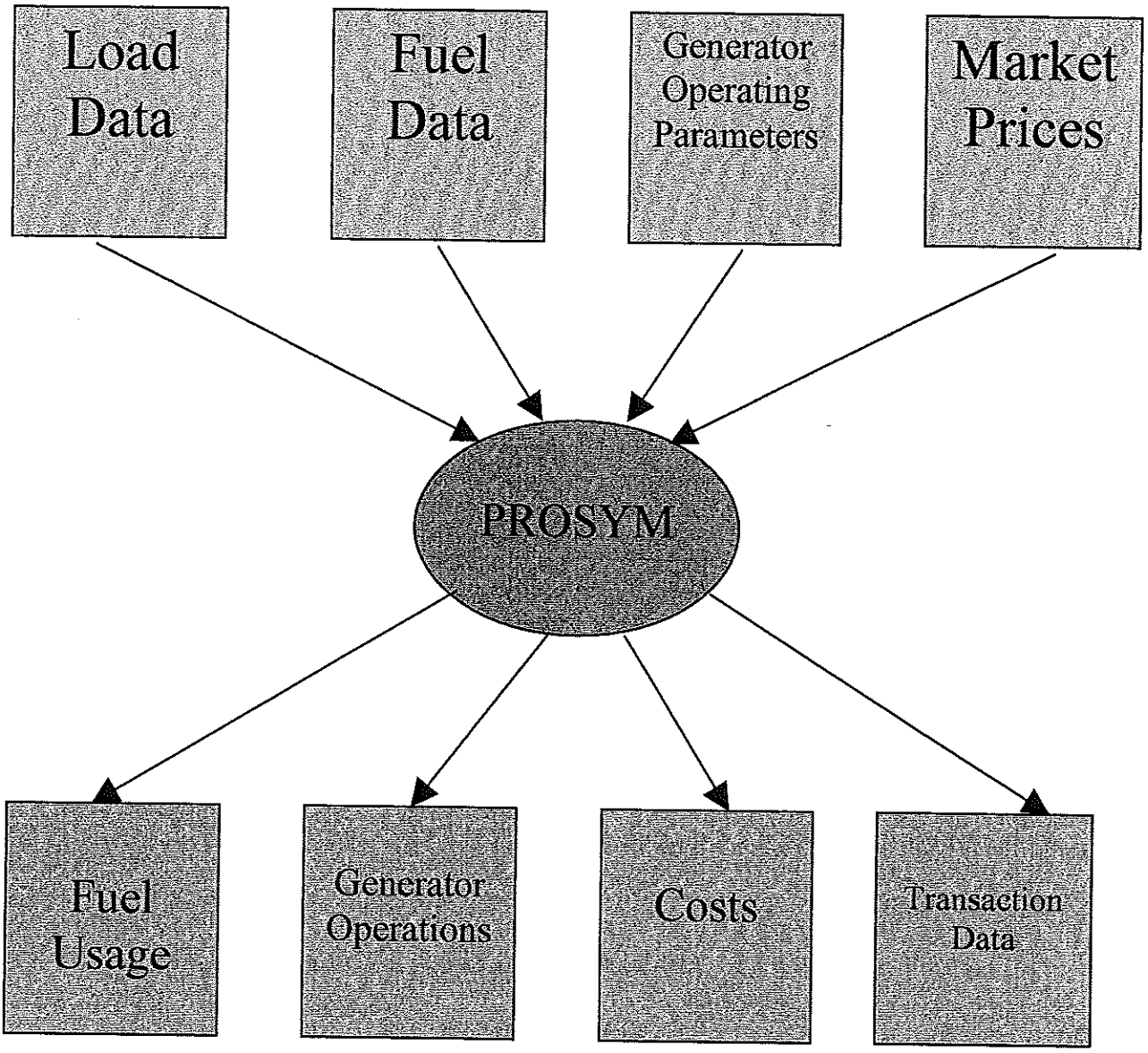
Q. After running the PROSYM model, what is the next step in your process?

A. For the purpose of these proceedings, the PROSYM model output that defines how the SCE&G electric system will meet the projected electric load is passed to the Rate Department, which develops the appropriate fuel factor for SCE&G rates. Mr. Hendrix will discuss this subject. The specific data items that are passed to the Rate Department

are plant generation, plant average heat rate, heat content of the coal, capacity factors by unit, off system purchases and sales, and associated market prices.

Q. Does this conclude your testimony?

A. Yes it does.


Load Data
Fuel Data
Generator Operating Parameters
Market Prices
PROSYM
Fuel Usage
Generator Operations
Costs
Transaction Data

Generator Operating Parameters *

Typical Coal Plant	
Commit Type	Must Run
Heat Rate	10000 @ 300 MW 9500 @ 400 MW 9000 @ 600 MW
Forced Outage Rate	3.8%
Fuel	Coal
Start Fuel	#2 Oil
Ramp Rate	250 MW/hour
Mean Time to Repair	96 hours
Minimum Up Time	120 hours
Minimum Down Time	48 hours
SO2 Costs	$75 / ton
NOX Costs	$3800 / ton
Start Costs	$4400 / start
Maximum Capacity	600
Minimum Capacity	300
Emergency Capacity	610

* This type information is entered for each unit.

Exhibit No. _____ (JWN-3)